Pest & Crop

http://www.entm.purdue.edu/Entomology/ext/targets/newslett.htm

April 2, 2004 - No. 3

In This Issue

Insects, Mites, and Nematodes

Pheromone Trap Cooperators Have Detected Black Cutworm Arrival – (*John Obermeyer and Larry Bledsoe*)

- This pest is beginning its annual invasion to the Midwest.
- Moths arriving in late April and beyond pose the greatest threat to crops.
- Heat unit accumulations from time of intense captures helps plan scouting activity.

Although at low numbers, black cutworm are beginning their movement into the Midwest from sites in south Texas and northern Mexico (see following trap report table). Warm, moist air currents sweeping up from the Gulf Coast literally lifts these moths up into the upper atmosphere and carries them into Midwestern states. The direction that these weather systems track and the number of moths that are carried within them will determine whether they are brought into our area and whether or not they will pose a threat to our crops.

As in the past, black cutworm pheromone trap cooperators located throughout the state will monitor moth arrival. As we approach the more critical times for moth activity, that being later April and beyond, we will be watching for what we refer to as an "intense capture."

Captured black cutworm moths

Black cutworm pheromone trap

This is when 9 or more moths are caught in a trap over a two-day period. When and if this occurs, we will begin accumulating heat units (HU base 50°F) to determine when the first cutting of corn by the larvae should occur. This occurs approximately 300 HU after the intense capture. Watch for this information and Bug Scout's alerts in future *Pest&Crop's* Weather Update.

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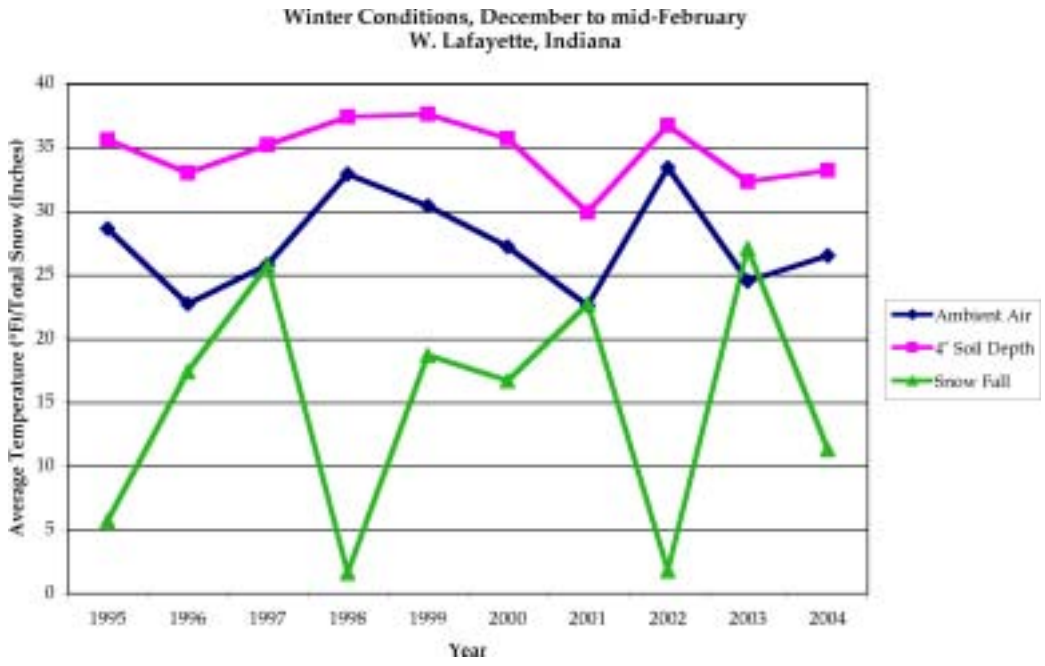
Black Cutworm Adult Pheromone Trap Report
Week 1 = 3/18/04 - 3/24/04 Week 2 = 3/25/04 - 3/31/04

County	Cooperator	BCW Trapped	
		Wk 1	Wk 2
Adams	Roe/Price Ag Services	0	0
Allen	Gynn/South Wind Farm	0	1
Benton	Babcock/Jasper Co. Co-op	-	0
Clay	Smith/Growers Co-op (Brazil)	0	6
Clay	Smith/Growers Co-op (Clay City)	0	5
Fayette	Schelle/Spring Valley Farms	0	7
Fountain	Hutson/Purdue CES	0	1
Fountain	Mroczkiewica/Syngenta	0	0
Gibson	Hirsch Farms	1	-
Knox	Smith/Growers Co-op (Fritchton)	0	0
Knox	Smith/Growers Co-op (Oaktown)	0	4
Lake	Kliene Farms (1)	0	1
Lake	Kliene Farms (2)	0	0
Newton	Babcock/Jasper Co. Co-op	-	4
Putnam	Nicholson Consulting	0	-
Randolph	Boyer/Davis-Purdue Ag Center	0	0
Rush	Tacheny/Pioneer Hi-Bred	-	8
Sullivan	Smith/Growers Co-op (New Lebanon)	0	6
Sullivan	Smith/Growers Co-op (Sullivan E)	0	5
Sullivan	Smith/Growers Co-op (Sullivan W)	0	2
Tippecanoe	Obermeyer/Purdue CES	0	1
Vermillion	Hutson/Purdue CES	0	1
Vigo	Smith/Growers Co-op (Terre Haute)	0	2
Warren	Babcock/Jasper Co. Co-op	-	0
White	Reynolds/Vogel Popcorn	0	2
Whitley	Walker/NE-Purdue Ag Center	0	0



Winter Temperatures and Field Crop Insects – (*John Obermeyer and Larry Bledsoe*)

- Temperature is just one factor that impacts an insect's winter survivability.
- Spring temperatures and moisture generally have a greater influence on insect numbers and subsequent crop damage.
- Production practices, such as date of planting, tillage type, and herbicide application, are often what makes or breaks an insect infestation.

We've had some cold and snowy days throughout this past winter. Will this equate to fewer insects and reduced crop damage this coming season? As you probably already guessed, it depends! Although we can't tell you for sure what will happen with these critters coming out of this winter, we can give you some information on insect/environment/crop interactions that might clear the picture some.

Overwintering insects utilize various biotic and abiotic mechanisms to keep them from dying during the long winter months. Survival tactics include, but are not limited to, lowering metabolic rates, chemical changes in bodily fluids, and finding "cozy" microenvironments. Predictive models for some overwintering insects exist but it is impossible to measure all environmental variables that individual insects are subjected to in their wintering location. The graph on page 2 compares ambient air and four-inch depth soil temperatures with snowfall recorded at the Agronomy Research Center in West Lafayette for ten winters. This represents how soil temperatures, though warmer, follow air temperature trends. However, as snowfall amounts decrease, the temperature differential is less between the air and soil (e.g., 2002, 1998). It comes as no surprise that snow cover provides an insulating blanket for wintering insects at or below ground level. Though the differences may seem minor to us, to a small, cold-blooded insect, it may make the difference between life and death.

Above Ground Insects:

Bean Leaf Beetle

Overwintering stage – adults under leaf litter, grass clumps, etc

Expected overwintering success – moderate to good depending on snow cover

Crop damage increases with early planted/emerging soybeans. Early in the spring beetles will feed on wild and cultivated legumes. Bean leaf beetle will then colonize the first emerging soybeans.

Concerns – besides potential reduced stands from damage to hypocotyls, cotyledons, and unifoliolate leaves, this beetle is a vector of the bean pod mottle virus. Early season inoculation of this disease will have the greatest impact on yield.

Considerations – beetle numbers were relatively low going into overwintering sites.

Early bean leaf beetle damage

Corn Flea Beetle

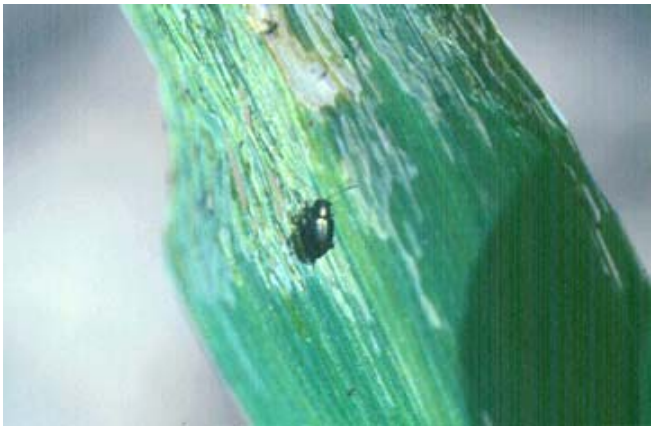
Overwintering stage – adults in grassy areas or wood lots

Expected overwintering success – poor to excellent (see last month's *Pest&Crop*)

Crop damage increases with early planted/emerging corn. Early in the spring beetles will feed on grasses. Corn flea beetle will then colonize first emerging corn. Some corn hybrids and inbreds are more susceptible than others.

Concerns – besides potential reduced stands from damage to emerging seedlings, this beetle is a vector of Stewart's disease. Stewart's disease is a greater threat to certain inbred lines of corn, some pop/sweet corn varieties, but rarely a concern in yellow dent corn.

Considerations – beetle numbers were relatively low going into overwintering sites.



Corn flea beetle and leaf scarring

European Corn Borer

Overwintering stage – larvae in corn stalks and possibly stalks of weed residue

Expected overwintering success – good

Crop damage increases due to first generation corn borer with – early planting and the tallest corn within an area, usually around the first week of June.

Concerns – high yielding/fast growing hybrids ("race horse") planted early in highly productive soils are often targeted by first generation egg laying moths.

Considerations – except for northcentral Indiana, populations going into overwintering were relatively low. A mild, moist spring may encourage corn borer diseases that could drastically reduce overwintering larval numbers. Rainy, stormy weather during the mating and egg-laying period is detrimental to moths.

Corn borer larva inside stalk to overwinter

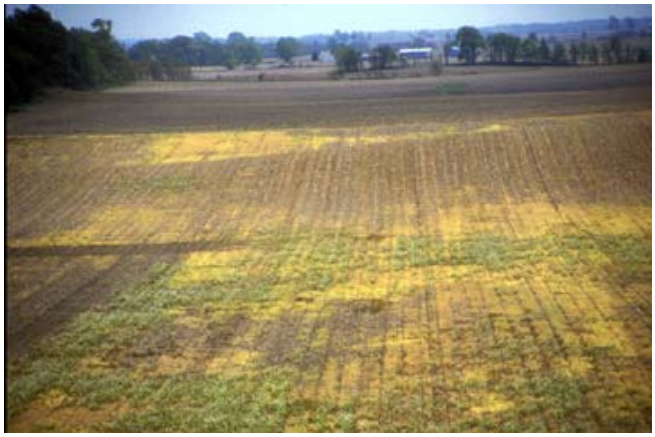
Black Cutworm

Overwintering stage – doesn't overwinter in the Midwest

Crop damage increases with large moth flights into Indiana. Moths carried into the state on storm fronts from the southwestern United States and Mexico.

Concerns – winter annuals growing on agricultural lands are targeted egg laying sites for arriving female moths. Burn-down herbicides applied during or shortly after planting will force hatching black cutworm larvae to move from the dying weeds to emerging crops.

Considerations – a hard freeze after egg laying may reduce black cutworm survivorship. Timing and number of moths arriving into the state is quite variable from year to year. Clean fields are less likely to have problems.



Egg laying attraction site for black cutworm moths

Alfalfa Weevil

Overwintering stage – adults under crop residue and eggs in stems

Expected overwintering success – highly variable, depends on freezing and thawing cycles.

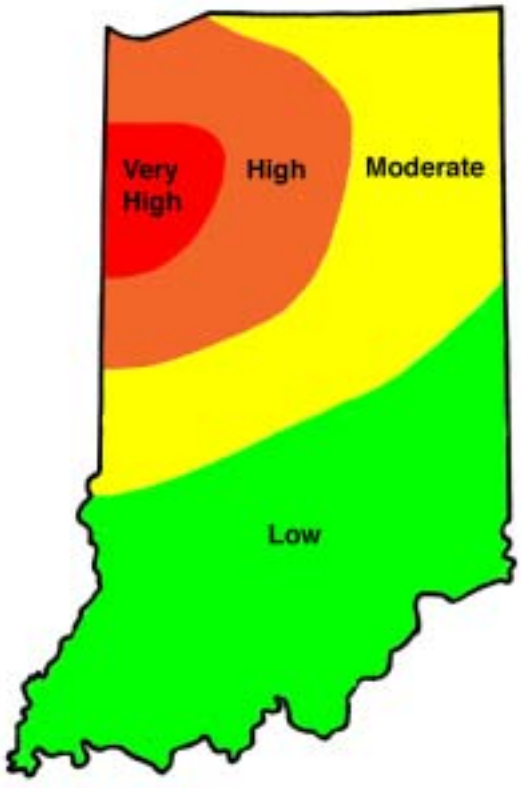
Crop damage increases with unseasonably warm early spring temperatures

Concerns – mild spring temperatures will accelerate egg hatch and adult egg laying. This will increase the number of weevil larvae feeding over a longer period of time. However, extreme spring temperatures can kill exposed adults and newly hatched larvae and can decrease concerns.

Considerations – a hard freeze after early spring growth may reduce early hatching larval populations.

Early alfalfa weevil larval feeding

Preceived First-Year Corn Rootworm Risk Areas



Below Ground Insects:

Western Corn Rootworm

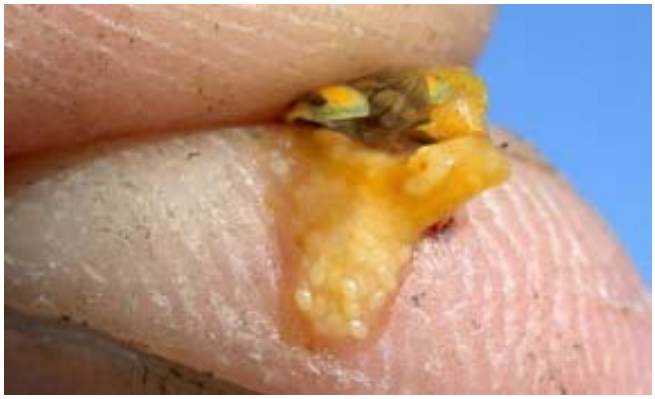
Overwintering stage – eggs in the soil (from just below the soil surface up to a foot or more deep)

Expected overwintering success – good

Crop damage increases with where rootworm beetles laid numerous eggs in last year's corn, soybean, or alfalfa crop and the field will be planted to corn in 2004.

Concerns – significant numbers of western corn rootworm beetles were observed in soybean fields last summer, especially in west central counties of Indiana (see map of "Perceived First-Year Corn Rootworm Risk Areas")

Considerations – soil insecticides applied during very early corn planting may have reduced efficacy by the time the rootworm eggs hatch in late May to early June. Cold winter temperatures have little effect on rootworm egg survival.



Eggs squeezed out of a western corn rootworm female

White Grubs

Overwintering stage – larvae/grubs in the soil

Expected overwintering success – moderate to good

Crop damage increases with early planting. Delayed crop emergence and growth will increase the opportunity for grubs to come into contact with and feed-on seedling roots.

Concerns – Japanese beetle is the predominant grub species in cultivated cropland in Indiana. Areas that experienced high numbers of Japanese beetles last year potentially have a higher risk of grub damage this spring.

Considerations – High organic matter soils may sustain large grub populations without significant crop damage since grubs can feed on dead and/or decaying plant matter.

Different sizes of white grubs

Click link below to view animations of several of these insects at our Field Crops IPM Website:

<http://www.entm.purdue.edu/entomology/ext/fieldcropsipm/animation.htm>

Purple, Yellow, and White – (*Glenn Nice, Bill Johnson, and Tom Bauman*)

Spring has often been associated with the return of the Robin, but to a weed scientist and many producers the start of the season and the warmer temperatures are celebrated with the colors purple, yellow, and white. These are the colors of the flowers of several winter annual weeds that can bloom in the spring. In recent springs comments have come to me about fields in the southern part of the state turning yellow, but I also hear about purple. Below are some of the winter annual weeds that can be found broken out by flower color.

Purple

Purple flowers can be seen on two of the most notorious winter annual weeds in Indiana. Henbit (*Lamium amplexicaule*) and purple deadnettle (*Lamium purpureum*). These closely related plants are often mistaken for one another. They are both mints, so they have the characteristic square stems. They both are low lying plants not getting much taller than 10 inches. The trick to telling the two plants apart is by looking at the leaves in the upper portions of the stem. Towards the top of the stem the leaves attach directly to the stem in henbit. In purple deadnettle, the upper leaves will have short petioles.

Henbit (above) and purple deadnettle (below)

Control:

Henbit Control, Purdue University Fall Applied Study 2003	
	1
2,4-D (1 pt.)	99*
2,4-D + Roundup WeatherMax (20 oz.)	99*
2,4-D + Sencor (5 oz.) + Python (1 oz.)	99*
2,4-D + Princep (1 pt.)	96*
2,4-D + Basis (0.5 oz.)	92*
2,4-D + Princep + Basis	96*

Treatment Before Soybean	% Control
2,4-D (1 pt.)	64
2,4-D + Roundup WeahterMax (16 oz.)	81*
2,4-D + Roundup WeatherMax + Canopy XL (1.3 oz.)	98*
2,4-D + Canopy XL (2.5 oz.) + Express (0.15 oz.	98*
2,4-D + Sencor (4 oz.) + Python (1 oz.)	97*
2,4-D + Backdraft	85*

Treatments were applied Nov. 8th, 2002 at the Pinny Purdue Research Farm. Weed control ratings were taken April 1, 2003. *Values with an asterisks beside them are not significantly different in the treatment before corn or treatment before soybean.

Purple deadnettle does not respond well to 2,4-D. In the 2004 Weed Control Guideline for Ohio and Indiana we give henbit an 8 out of 10 for efficacy, but purple deadnettle gets a 4.

Yellow

Cressleaf groundsel (*Senecio glabellus*) is often mistaken for a mustard due to its prominent yellow flowers and pinnately divided leaves. However, at closer inspection, it is actually a composite. This annual can

Cressleaf groundsel flowers and pinnately divided leaves (Photo by M. Loux, W. Shulaw, J. Stachler, Ohio State Univ.)

paint a field yellow. It has a hollow stem that can get 1 to 3 feet tall. Its 6 to 12 petal-looking ray flowers distinguish it from being a mustard. Cressleaf groundsel belongs to a group of plants that are considered toxic to cattle and horses. The toxic compounds in *Senecio* species causes "seneciosis" or "pictou disease," due to liver damage. The toxins are found in the plant highest when the plant is bud to flower. Fortunately, cressleaf groundsel is not very palatable and under typical grazing conditions, it is unlikely that animals will consume amounts to cause poisoning. The toxins are still present in the making of hay.

Control: Mowing can reduce cressleaf groundsel infestations by reducing seed production. Mow in the spring from bud to flower. In grass pastures when plants are small in the fall (October or early November) or spring (March or early April) 2,4-D (1 qt./A) can be effective. If plants are larger it is recommended to add dicamba (Banvel/Clairity/Sterling) to the 2,4-D. Desirable legumes will be damaged or killed.

In alfalfa, Sencor (1.3 lb./A) or Velpar (2 to 3 qt./A) are effective when used late February while alfalfa is still dormant. Both Sencor and Velpar can be used in established fields only. Pursuit can give some suppression when applied at 2.16 oz./A in the fall when plants are less than 3 inches tall.

Control of cressleaf groundsel in winter wheat can be done by using a mixture of 2,4-D and dicamba or Harmony Extra in the early spring when the rosettes are small.

In corn or soybean the use of glyphosate and 2,4-D can be used late October or early November. If used in the spring 2,4-D can be used at 1 pt./A 7 days before planting soybean. If more than 1 pt./A is used most labels require that you wait 30 days.

Mustards, such as wild mustard (*Brassica kaber*) and yellow rocket (*Barbarea vulgaris*) also have yellow flowers, but with close inspection, these flowers only appear to have 4 petal-looking sepals.

Control: Shepherd's-purse will be included in the control of the mustards. The two plants respond similarly to herbicide control. Many of the herbicides labeled for fall or spring applications are effective on mustards or shepherd's-purse. A list of products can be seen in the 2004 Weed Control Guide for Ohio and Indiana <www.btny.purdue.edu/Pubs/WS/WS-16/>.

White

Shepherd's-purse (*Capsella bursa-pastoris*) is a mustard with a white flower. Similar to the mustards mentioned above, basal leaves are highly lobed forming a rosette. This can sometimes be mistaken as dandelion

Shepherd's-purse infested field

in the fall when all that are present are the rosettes. To tell shepherd's-purse from dandelion is to identify if the lobes in the rosette leaves come to points that point towards the center of the rosette. If this is the case, then you are looking at a dandelion rosette. In the spring once shepherd's-purse starts to bloom you will see tiny white flowers with the characteristic four petal-looking sepals. The pods are triangular in shape, giving it its common name "Shepherd's-purse."

Control: See Mustard above.

Common chickweed (*Stellaria media*), also has tiny white flowers and is no stranger to Indiana. This annual can form a low lying green mat in fields or can be seen in the edges of the grass in our lawns. Stems can reach up as high as 16 inches. Leaves are light green, simple, ovate to broadly elliptic that come to a point. The leaves are between 2/10 to almost an inch long and 1/10 to almost 1/2 inch wide. The flowers appear to have ten petals, but the ten petals are actually 5 petals that are deeply lobed.

Individual checkweed plant with deeply lobed flower

Control:

Chickweek Control, Purdue University 2003.		
Treatment Before Corn	**% Control**	
	4-1	**5-1**
2,4-D (1 pt.)	99*	99*
2,4-D + Roundup WeatherMax (20 oz.)	89*	96*
2,4-D + Sencor (5 oz.) + Python (1 oz.)	100*	100*
2,4-D + Princep (1 pt.)	99*	99*
2,4-D + Basis (0.5 oz.)	83*	92
2,4-D + Princep + Basis	86*	78
Treatment Before Soybean	**% Control**	
	4-1	**5-1**
2,4-D (1 pt.)	19	20
2,4-D + Roundup WeatherMax (16 oz.)	91*	83*
2,4-D + Roundup WeatherMax + Canopy XL (1.3 oz.)	94*	96*
2,4-D + Canopy XL (2.5 oz.) + Express (0.15 oz.	88*	91*
2,4-D + Sencor (4 oz.) + Python (1 oz.)	74	85*
2,4-D + Backdraft	96*	95*

Treatments were applied Nov. 8th, 2002 at the Pinny purdue Research Farm. Weed control ratings were taken April 1, 2003 and May 1, 2003.
*Values with an asterisks beside them are not significantly different in the treatment before corn or treatment before soybean.

Star-of-Bethlehem (*Ornithogalum umbellatum*) can form dense mats of dark green narrow linear leaves in the Southern portion of the state. Often a problem in lawns; however, I have also seen it in row crop fields. At first glance, this plant might be mistaken as a thick grass. But in actuality, this plant belongs to the lily family. If you dig Star-of-Bethlehem up you will see that it arises from many bulbs.

Tuft of Star-of-Bethlehem (*Photo: Dr. Fred Fishel, University of Missouri*)

Control: Star-of-Bethlehem is known for being non-responsive to several herbicides. In Indiana it is often a problem in no-till fields where tillage is not an option. Dr. Bryan Young of the Southern Illinois University did some work with Star-of-Bethlehem in no-till soybean. Gramoxone Max + Activator 90 (2 pt. + 0.25%); Gramoxone Max + Harmony GT + Activator 90 (2 pt. + 0.6 oz. + 0.25%); Valor + COC (2.5 oz. + 1%); Authority + COC (5.33 oz. + 1%); and Canopy XL + COC (6.8 oz.) all controlled Star-of-Bethlehem 95% or greater, 14 days after treatment. Applications were put out April 18th.

Plant Diseases

Yellowing of Wheat - (*Gregory Shaner*)

- It's that time of year when wheat fields may show a yellow mosaic

Indiana had some unusually warm weather last week, but now temperatures have returned to more normal ranges for this time of year. These conditions can promote development of symptoms in wheat caused by either of two soilborne viruses: *Soilborne wheat mosaic virus* and *Wheat spindle streak mosaic virus*. Both viruses cause a yellowing of foliage. *Soilborne wheat mosaic virus* causes a mosaic—narrow, pale green to yellow, wavy-margined streaks on the leaf blade. Symptoms caused by *Wheat spindle streak mosaic virus* infection are similar, but the streaks tend to taper at both ends, hence the name "spindle." From a distance, fields or parts of fields are pale green or yellow, as though they are deficient in nitrogen. Charles Mansfield has reported symptoms such as these in some wheat fields in southwest Indiana. The viruses occur throughout the state and may appear in any wheat field.

The viruses persist in a common soilborne fungus. This fungus infects wheat roots in the fall. Infection by the fungus itself is of little consequence, but it does allow transmission of the viruses to the plant. Symptoms of virus infection don't appear until the following spring. The timing of symptom development depends on weather. Intermittent periods of warm and cold weather favor symptom development.

In practice, it is very difficult to distinguish these two diseases based on symptoms. Both viruses may be found

in the same field, and both viruses may infect a single plant. *Wheat spindle streak virus* tends to be more uniformly distributed throughout fields than is *Soilborne wheat mosaic virus*.

Most varieties of soft red winter wheat grown in Indiana have some degree of resistance to these viruses. They may show some yellowing during periods of fluctuating temperatures during the spring, but once the cold weather is past, these varieties tend to outgrow the symptoms on lower leaves and there is probably little damage. A few varieties are more susceptible. The intensity of yellowing is greater, and is accompanied by stunting, reduced tillering, and death of some plants in the field. These varieties will suffer economic damage from these diseases. Some varieties show a rosette symptom when infected by *Soilborne wheat mosaic virus*. They produce numerous, stunted tillers. There is no remedial action that can be taken at this stage. If a variety develops severe symptoms, don't plant it again next year. There are plenty of varieties with good resistance.

Agronomy Tips

Condition of the Indiana Winter Wheat Crop – (*Ellsworth P. Christmas, Charles Mansfield and Greg Shaner*)

- Indiana's wheat crop is looking good!!

To date, the Indiana soft winter wheat crop looks good. Wheat in the southern one-third of Indiana has broken dormancy and has just begun to joint, with the growing point only about an inch above the soil surface. Although wheat has broken dormancy in the northern part of the state, it has grown little due to cool weather and has not yet begun to joint. Some very late planted fields appear to have a thin stand and some heaving as a result of poor fall growth, reduced root systems and perhaps soil compaction. A few fields are exhibiting the symptoms of soil borne mosaic (see "Yellowing of Wheat" in Plant Diseases).

The heavy rainfall since top-dressing has raised some questions about nitrogen loss. With the exception of coarse textured soils, little nitrogen has been lost as a result of these rains since soil temperatures have been low and conversion of the ammonium nitrogen to nitrate has been quite slow. If wheat has not yet been top-dressed, the nitrogen should be applied as soon as soil conditions permit. Where the wheat is growing vigorously, use streamer bars with liquid or use granular forms of nitrogen to minimize leaf burn. Use the recommended rate of nitrogen for the yield potential of the field even though the wheat has started to grow. Where the stand and tiller development are good, 90 pounds of nitrogen should be applied per acre. Reductions in nitrogen rate can and should be made only after the wheat has started to joint.

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Soybean Seed Size Alert - (*Ellsworth P. Christmas*)

- Soybean seed available for planting the 2004 crop will be 10 to 20% smaller.
- The quantity of soybean seed this year is very good.
- Drills and planters **MUST** be re-calibrated to adjust for the smaller seed.

Sub-samples of seed taken from plots at the Agronomy Center for Research and Education at harvest in 2003 indicated that the harvested seed was 12 to 20% smaller than the seed utilized to plant the plots. The smaller seed was most likely the result of late season heat and moisture stresses on the 2003 soybean crop. The smallness of the seed does not appear to have reduced germination and should have no negative effect on the vigor of seed available to plant the 2004 crop.

However, seed available to farmers this year will most likely be 10 to 20% smaller than last year. This will vary depending on the location of the seed production and the maturity group. Seed produced in southern Indiana may be near normal in size while seed from northern Indiana will be smaller than normal. Group II soybeans had reached the R-5.5 growth stage when the moisture stress was most severe, resulting in much smaller seed than normal. The Group III soybeans were at the R-5.0 stage of growth during the most stressful period resulting in significant seed abortion but less reduction in seed size. The smaller seed means that a farmer will need to purchase 10 to 20% fewer units of seed in 2004 to plant the same land area as 2003. Producers need to obtain seed counts from their seed supplier prior to finalizing the number of units needed in 2004.

In addition to adjusting seed purchases, producers **MUST** recalibrate drills and planters to account for the reduced seed size. Always check the seed tag for the percent germination and the number of seeds per pound

before calibrating drills and planters. When calibrating drills, collect seed from ALL of the rows since the seeding rate varies widely from one row to another. Failure to recalibrate will result in excessive seeding rates, additional expense for unneeded seed, (just when seed costs are already much higher than those in 2003), and plant stands that are too thick. Thick stands will result in plants that are likely to be taller with smaller stems and subject to lodging. If lodging occurs while the plants are green and growing there will be an overall reduction in the total leaf canopy and some plants will die, resulting in a yield reduction. On the other hand, if lodging occurs after physiological maturity, the soybeans will mature in a near normal fashion but field losses will occur at harvest.

Purdue recommends seeding rates of 200,000, 165,000 and 130,000 seeds per acre for 7.5, 15 and 30 inch rows respectively. This recommendation is based on seed with a germination of at least 90% and that 90 % of those seeds will emerge and become established as normal plants. The resultant stand should be 165,000, 135,000 and 105,000 plants per acre respectively for 7.5, 15 and 30 inch rows.

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Planter Adjustments - A Key Step in Achieving Uniform Stands in Corn – (*Peter Thomison, Ohio State Univ.*)

Uneven plant spacing and emergence may reduce yield potential in corn. Seed should be spaced as uniformly as possible within the row to ensure maximum yields and optimal crop performance. Corn plants next to a gap in the row may produce a larger ear or additional ears (if the hybrid has a prolific tendency), compensating to some extent for missing plants. Skips can reduce yield in fields where the intended population is at or below the optimum, while doubles increase yield when populations are less than optimum. Reduced plant stands will yield better if plants are spaced uniformly than if there are large gaps in the row. As a "rule of thumb", yields are reduced an additional 5 percent if there are gaps of 4 to 6 feet in the row and an additional 2 percent for gaps of 1 to 3 feet.

Uneven corn emergence will generally have a greater impact on grain yield than uneven plant spacing. Uneven emergence affects corn performance because competition from larger, early-emerging plants decreases the yield from smaller, later-emerging plants. If the delay in emergence is less than two weeks, replanting increases yields less than 5 percent, regardless of the pattern of unevenness. However, if one-half or more of the plants in the stand emerge three weeks late or later, then replanting may increase yields up to 10 percent. Emergence delays of 10 days or more usually translate to growth stage differences of two leaves or more. When two plants differ by two leaves or more, the younger, smaller plant is more likely to be barren or produce nubbin ears. Weeds also tend to be a greater problem in those areas of a field characterized by skips and gaps in the corn rows, and slow erratic corn emergence.

Corn sometimes emerges unevenly because of environmental conditions beyond the control of growers. However, timely planter servicing and adjustment, as well as appropriate management practices, can help prevent many stand uniformity problems. The following are some tips for improving the uniformity of seed placement during planting.

1. Keep the planting speed within the range specified in the planter's manual.
2. Match the seed grade with the planter plate.
3. Check planters with finger pickups for wear on the back plate and brush (use a feeler gauge to check tension on the fingers, then tighten them correctly).
4. Check for wear on double-disc openers and seed tubes.
5. Make sure the sprocket settings on the planter transmission are correct.
6. Check for worn chains, stiff chain links, and improper tire pressure.
7. Make sure seed drop tubes are clean and clear of any obstructions.
8. Clean seed tube sensors if a planter monitor is being used.
9. Make sure coulters and disc openers are aligned.
10. Match the air pressure to the weight of the seed being planted.
11. Make planter adjustments and follow lubricant recommendations when using seed-applied insecticides (e.g., Poncho and Cruiser)

In 2004, as much as 20% or more of the corn acreage in Ohio may be planted with seed-applied insecticides (e.g., Poncho and Cruiser). While these seed insecticides may help reduce stand losses from soil insects, it is critical that corn growers make planter adjustments and follow lubricant recommendations when using these seed-applied insecticides. Unless these precautions are followed, the extra chemical loading on the seed may adversely affect the "plantability" of seed - vacuum planters may underseed and finger pickup planters may overseed. To improve planter accuracy, talc or graphite should be used according to the planter manufacturer's recommendations. With vacuum planters, it will probably be necessary to raise the vacuum to achieve more accurate seed drop.

For more information on planter adjustments to improve stand establishment in corn, consult: "Tips to Reduce Planter Performance Effects on Corn Yield" OSU Extension Fact Sheet AGF-150-01<http://ohioline.osu.edu/agf-fact/0150.html>.

New Field Management Materials from Purdue Extension – (*Brent Ladd, Agricultural & Biological Engineering*)

Conducting environmental assessments for agricultural practices can seem daunting. A team of farmers, scientists, and soil and water specialists have developed an easy to do field management assessment that can lead to improved field management practices and environmental protection. The materials titled Field Assessment for Water Resource Protection and supporting materials are now available for use in Indiana.

The materials are focused on improving field crop management and soil monitoring skills for better decision making for both production and environmental protection. The Field Assessment materials cover nutrients, soils, pests, drainage & irrigation, and areas adjacent to fields.

These materials are designed for ease of use by the producer. In less than an hour of time commitment, these resource guides can hone in on where improvements can make sense in the field, along with the contacts and recommendations to get the job done. We think some of these changes can ultimately improve the bottom line, too.

The web site for viewing the new materials and accompanying curricula and video module is at <http://www.ecn.purdue.edu/safewater/field>.

Hard copies of the materials can be obtained directly from Purdue by calling toll-free 1-888-EXT-INFO and requesting publications Field Assessment WQ-42 and On-Farm Soil Monitoring WQ-43. There is a nominal shipping charge of $1.50 per publication.

Additional Information: contact Brent Ladd, Purdue, laddb@purdue.edu, or by phone at 765-496-6331.

Bug Scout

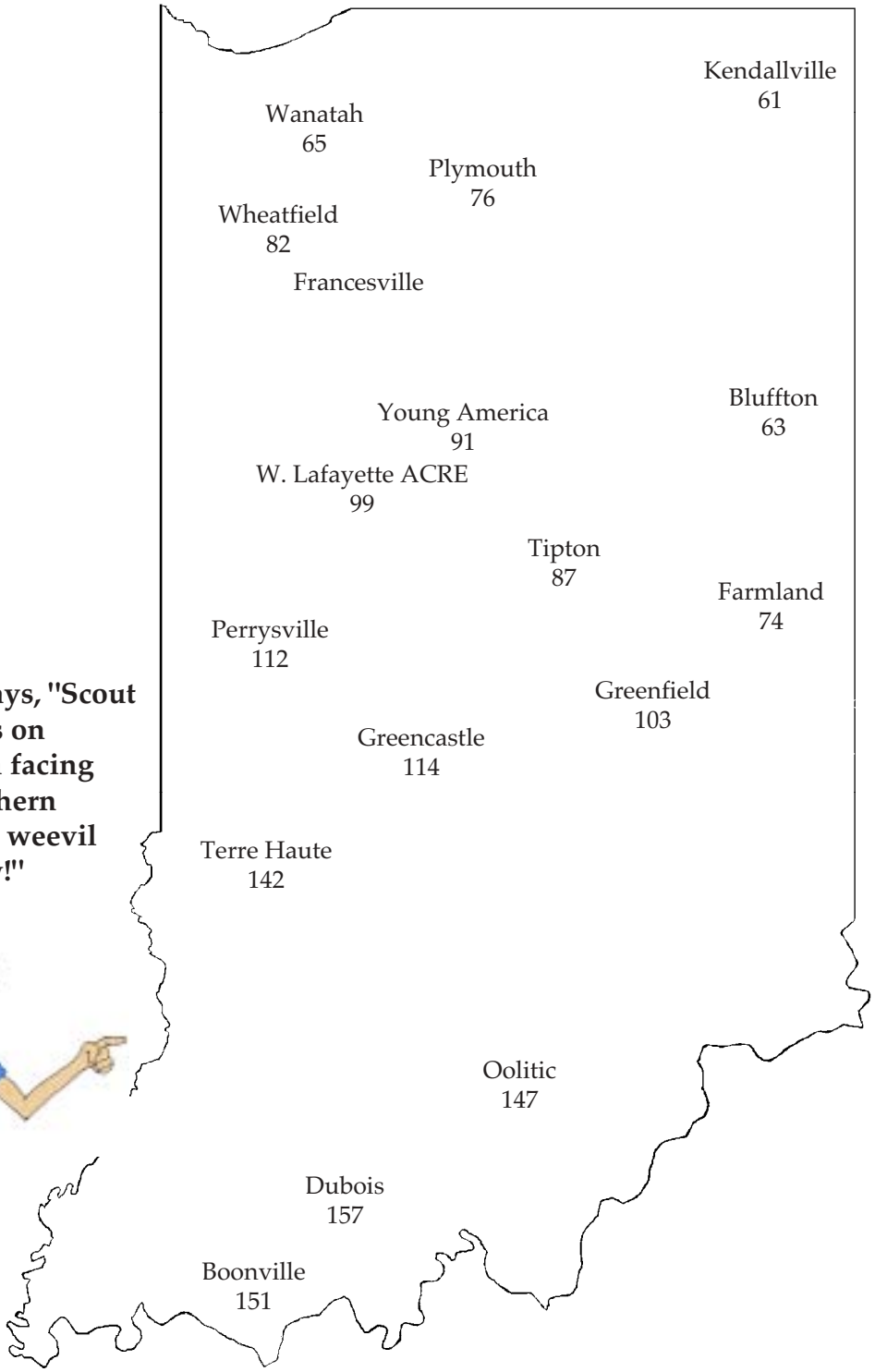
Ol' Joe will go to any length to be the first farmer in the fields every year!

Weather Update

Temperatures as of March 31, 2004

MAP KEY
Location HU48

HU48 = heat units at a 48°F base from Jan. 1, for alfalfa weevil development (begin scouting at 200)



Bug Scout says, "Scout alfalfa fields on sandy, south facing soils in southern counties, for weevil damage now!"

4" Bare Soil Temperatures 3/31/04

Location	Max.	Min.
Wanatah	54	46
Winamac	53	47
Bluffton	50	48
Chalmers	52	47
W Laf Agro	53	48
Tipton	50	46
Farmland	53	48
Perrysville	55	50
Crawfordsville	47	44
Liberty	59	49
Oolitic	53	46

The ***Pest&Crop*** is produced by the Departments of Agronomy, Botany and Plant Pathology, and Entomology at Purdue University. The Newsletter is published monthly February, March, October, and November. Weekly publication begins the first week of April and continues through mid-September. If there are questions or problems, contact the Extension Entomology Office at (765) 494-8761. Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.

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